ISSN: 3049-2521 (O)

Volume I

2021

LEX AD COELUM

A Flagship Journal of

CENTRE FOR AVIATION AND SPACE LAWS

THE WEST BENGAL NATIONAL UNIVERSITY OF JURIDICAL SCIENCES, KOLKATA

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LEX AD COELUM

TABLE OF CONTENTS

VOLUME I (JULY– DECEMBER 2021)

P. No.

1. **Humans in Space Policy for India 2021**.....1-5

Prof. Dr. Sandeepa Bhat B.

2. **Unravelling the Space Debris Enigma**.....6-10

Geetanjali R Kamat

3. **Arbitration of Space Disputes: A Review of the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities**.....11-15

Arthad Kurlekar

4. **Losing Afghan Land, and also Skies**.....16-18

Avantik Tamta

5. **Evolving Customary Law in Outer Space Frontier Settlements**.....19-24

Jennifer A. Brobst

6. **Is there an Indigenous Right to Space?**.....25-30

Valmaine Toki

7. **Space Travel: Select Legal Issues**.....31-35

G. S. Sachdeva

8. **MARS4 Metaverse, NFTs, and the Future of Simulated Space Property Rights**.....36-39

Dr. Shouvik Kumar Guha

9. **Responsibility for Activities in Outer Space**.....40-44

Danny Johansen

HUMANS IN SPACE POLICY FOR INDIA 2021

Sandeepa Bhat B.[*]

Keywords: Common rights – DoS/ISRO – Gaganyaan – Intellectual property – Space Act of India

India has evolved as a major space power over the years. The twenty-first century India has been successful in reaching the moon and the mars, which has been accomplished earlier by only three other States in the world.[1] The plan for the Indian human mission to the outer space (Gaganyaan) has been under consideration for more than a decade. Accomplishing it would also place India on the list of the select few States to achieve this feat of human presence in outer space. With an objective to have sustained human presence in outer space for enabling socio-economic growth, the Department of Space has come-up with the Draft Humans in Space Policy for India 2021 (hereinafter 'the Draft Policy'), which was opened for public comments in February 2021.

The Policy and its Execution

The Preamble of the Draft Policy recognises the changing dimensions of space activities with the entry of private players into the field. The Indian Government is making efforts to unlock the space sector for incentivising private investments with an objective to boost its ailing economy, especially after the unprecedented economic impact of COVID-19. Through the Draft Policy, as stated in the Preamble, efforts are made towards the adoption of regulatory framework and partnership-building with the public-private associations. This policy framework for human spaceflight is intended to foster collaborations and address proliferation concerns. A reference can also be found in the Preamble on the compliance of laws, policies and treaties in the process of space capacity-building and furthering India's role in the space sector.

Though the scope of the Draft Policy vaguely refers to activities under the Indian human space programme and future activities in conjunction with them without any definition, it seems to apply the proposed policy to both public and private sector activities. The substance of the Draft Policy mentions the basic policy principle as "The Humans in Space Policy aims for sustained human presence in

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space as an instrument for development, innovation and foster collaborations in alignment with national interests." Though catering to the national interests is significant for the States, the need for fostering the international interest is equally significant in the field of outer space activities. The entire edifice of space law is rooted in the common rights' principles developed under the five international space treaties of the twentieth century entered under the patronage of the United Nations.[2] Thus, we have the principles like; province of all mankind, absence of national or individual appropriation, considering the interests and benefits of all countries, international cooperation etc. advocated under the space treaties. India, being a strong advocate of common rights' regime in outer space, should recognise the interest of the international community in its every law and policy objective.

Execution of activities of human space programme is to be done by the Department of Space or by the Indian Space Research Organization (hereinafter 'the DoS/ISRO'). The Draft Policy confers wide power to the DoS/ISRO to develop various guidelines including 'approval-mechanism' for "activities under the Indian human space programme in confirmation with extant Space Act of India and policy."[3] There are two concerns that arise out of this. First, this provision is based on the assumption of an enabling law for approval-mechanism, which has not been adopted till date in India. In the absence of an enabling legislation, delegating the power of authorisation to the DoS/ISRO without any legislative framework is questionable. Second, the clubbing of power of authorization and execution with the same agency is also a matter of concern as it amounts to a situation of the DoS/ISRO self-judging its activities. An independent agency to scrutinise the preparedness, safety, security and various compliances for authorization is essential since authorization for any space activity is associated with the burden of State responsibility[4] and international liability[5] under the space treaties. In the event of any disaster due to the lack of preparedness or inadequate safety measures either by the DoS/ISRO or by its private partner, the State exchequer would be hit hard for compensating the victims. This can simply be averted with a second level check of independent scrutiny.

Guidelines

The next part of the Draft Policy provides for eight guidelines to be followed by the Department of Space in connection with the Gaganyaan. These guidelines

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include the demonstration of capability for human space flight, developing a long-term roadmap for sustained human missions to outer space, identifying and developing necessary technologies, enabling greater participation of various stakeholders, developing collaborative framework for scientific research, fostering international cooperation to develop collaborative programmes, developing human resources and encouraging entrepreneurship, and promoting outreach activities to encourage public involvement in human space programmes. Though these guidelines are significant in achieving sustained human missions to outer space, much depends on the practical implementation of these guidelines. Unfortunately, the Draft Policy doesn't provide for the specific nuances in terms of the implementation of the guidelines.

Procedures?

The last part of the Draft Policy mentions about the procedures, which seems to be a misnomer. Though it mentions about following certain procedures by the DoS/ISRO in implementing some of the guidelines, none of the four clauses in this part is on the procedure to be followed. The first clause mentions about the establishment of a national level body by the DoS/ISRO for supervising and coordinating collaborative ventures. Clauses 2 and 3 under this part entrust the DoS/ISRO to develop certification process for crew safety and to set criteria for crew selection. The last clause mentions about the application of the Space Act of India regarding the protection of intellectual property rights and settlement of disputes. Hence, none of the clauses provide for any procedure for implementing the guidelines. The proposed national level body under this part is primarily for coordination between various stakeholders and also for overseeing the activities under human space programmes. As it is intended to oversee all human space missions including the ISRO missions, the DoS/ISRO's control over it cannot be justified from a legal perspective. Moreover, the Draft Policy fails to delineate the powers, responsibilities and role of different bodies like the ISRO, Antrix Corporation, NewSpace India Limited, and the proposed new national level body in connection with the human space missions.

On the intellectual property and dispute settlement clause, it is also pertinent to note here that the current status of the intellectual property rights' protection in outer space under the Indian laws is quite unclear. Only reference to space-based

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intellectual property rights can be seen in the Draft Space Activities Bill 2017 (hereinafter 'the Draft Bill'). Section 25(1) of the Draft Bill stipulates the protection of intellectual property rights generated or created during the course of any activity under any law for the time being in force. However, Section 25(2) confers the property rights to the Central Government on the space-based intellectual property created on board any space object. Unless there is change in this position of State monopoly over space-based intellectual property rights, the collaborative human space activities advocated under the Draft Policy would remain as a distant dream in India. It is obvious that the private players would have no incentive to make huge investments in human space missions when they are aware of the fact that their stake in the intellectual property rights would be usurped by the State. The reference by the Draft Policy to the Space Act of India for the settlement of disputes is also misleading as there is no clause on the settlement of disputes under the Draft Bill.

Concluding Remarks

In the ultimate analysis, developing policy guidelines for the sustained human space activities in India is a welcome step. However, the current Draft Policy suffers from several limitations as highlighted above. It lacks long-term vision and requisite details for having a comprehensive policy. More significantly, the much-needed legal understanding, which is indispensable in dealing with any space activity, is completely missing under the Draft Policy. Hence, it is advisable to revisit the Draft Policy to have a comprehensive, legally appropriate and transparent policy framework to facilitate collaborative ventures as has been intended by the drafters.

Notes & References:

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[1] The Soviet Union/Russia, the United States of America and China are the only three other States.

[2] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) 1967,

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Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Rescue Agreement) 1968, Convention on International Liability for Damage Caused by Space Objects (Liability Convention) 1972, Convention on Registration of Objects Launched into Outer Space (Registration Convention) 1975 and Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement) 1979.

[3] ISRO Humans in Space Policy, Clause 4.

[4] Outer Space Treaty, Art. VI.

[5] *Ibid*, Art. VII and Liability Convention

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UNRAVELLING THE SPACE DEBRIS ENIGMA

Geetanjali R Kamat[*]

Keywords: COPUOS Standardization - Non-binding mitigation guidelines - Space debris - Sustainability

The twenty-first century is witnessing the emergence of a new era with countries striving to leave their mark in outer space. With more nations willing to compete in the global space race, the future of space exploration looks promising. At the same time, countries are increasingly becoming concerned of the consequences of such activities on the space and the earth's environment. One such issue is that of "space debris" – a topic which has been subject to years of scientific research and several discussions. In May 2021, the debris from China's Long March-5B rocket, used to launch its new space station (Tiangong), crashed into the Indian Ocean near Maldives. Although instances of space debris resulting in damage to spacecrafts, or territories on the earth's surface are not unprecedented, this incident reiterated the absence of binding international law regarding space debris.

Legal Regime

Presently, international space law requires States to (a) bear international responsibility for conducting national activities in outer space[1]; and (b) return space objects, if found within their territory, to the state of registry.[2] In terms of liability, a "launching state" is absolutely liable for damage caused to another State, by its space object, on the earth's surface or to aircraft in flight.[3] However, in case of damage caused by a space object of one launching state to a space object, or to a person or property on board a space object of another launching state in outer space or in airspace, a fault-based standard of liability will be imposed on the former.[4]

Apart from the Outer Space Treaty and the Liability Convention, we have bodies such as the Inter-Agency Space Debris Coordination Committee (hereinafter 'IADC') and the Committee on the Peaceful Uses of Outer Space (hereinafter 'COPUOS'), along with national and international space agencies, working on this problem. In 2002, IADC issued the Space Debris Mitigation Guidelines (hereinafter 'IADC Guidelines'), focusing on aspects such as minimizing the potential for on-

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orbit break-ups and post-mission disposal. In 2004, the European Space Agency and the national space agencies of France, Germany, the UK, and Italy adopted the European Code of Conduct for Space Debris Mitigation (hereinafter 'the European Code of Conduct'), which is in alignment with the IADC Guidelines. Apart from providing for management measures, such as the appointment of the 'Space Debris Manager', the European Code of Conduct consists of design and operational measures for space debris mitigation. Similarly, using the IADC Guidelines as a starting point, COPUOS endorsed certain guidelines (hereinafter 'the COPUOS Guidelines') in 2007. Given the non-binding nature of the COPUOS Guidelines, member States were expected to implement "national mechanisms" with an objective to enforce space debris mitigation procedures.

Challenges

International responsibility:

The Outer Space Treaty is guided by principles of co-operation and mutual assistance whereby all outer space activities are to be carried out with "due regard" to the corresponding interests of other member States.[5] Therefore, the freedom of scientific investigation must be balanced with the larger interests of the international space community. Further, a member State is entitled to request consultation concerning the outer space activity with another member State if it has "reason to believe" that such activity would cause potentially harmful interference with the peaceful exploration of outer space.[6] While a member State is, in theory, permitted to exercise such a diplomatic tool, the extent of its enforceability and the effectiveness of such dialogue are uncertain.

Space sustainability:

Another important facet of the international approach to long-term sustainability of space activities includes the comprehensive set of standards provided by the International Organization for Standardization (hereinafter 'the ISO Standards'). The ISO Standards specify prudent measures for designing and operating spacecrafts in a safe manner with an objective to prevent creation of space debris. In the past, the ISO Standards have benefitted Ukraine, which used these standards

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to conduct space debris mitigation evaluations of its launch vehicle systems. Therefore, it is crucial that States strictly comply with the ISO Standards or alternatively, formulate their own measures to implement a procedural framework for space debris mitigation which regulates different stages of space systems. However, if States adopt vastly different standards, this may potentially lead to inconsistent compliance and varying interpretation of "sufficient" space debris mitigation measures.

Way Forward

Incentivizing space debris mitigation:

In a welcome move, the 'Global Future Council on Space Technologies' has developed the concept of Space Sustainability Rating (hereinafter 'Sustainability Rating'), which is expected to come into effect early next year. The Sustainability Rating seeks to encourage responsible behaviour in outer space by increasing the transparency of the debris mitigation efforts. There is a possibility that in the near future, rankings in terms of Sustainability Ratings may even provide a hierarchy of "ethical spacefaring nations" and incentivize States to pay greater attention to space debris mitigation.

Liability Convention:

It is a generally agreed principle that damage to the outer space environment does not directly fall within the scope of the Liability Convention. Accordingly, accidents which occur due to a space object, either in outer space, to an aircraft in flight, or on the earth's surface, warrant a separate framework for assessing "damage" and providing "standards of liability". It is prudent that a stricter framework for liability pertaining to the outer space environment, which also provides for reasonable exceptions, should be drafted in order to enforce an otherwise soft law. Another question worth considering is the stage at which States ought to be held accountable for undertaking space exploration activities in a reckless manner. Instead of risking damage to lives and property owing to an unpredictable trajectory, there should be a uniform mechanism for settling apprehensions in this regard.

Steps taken by India:

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The Indian Space Research Organization has been an active member of IADC since 1996. As of June 2021, India is in the process of formally adopting a national mechanism on space debris mitigation and strengthening the domestic requirements for Indian entities. In the same month, the Department of Space circulated the Draft National Space Transportation Policy, 2020, (hereinafter 'the NSTP') for public comments. The pro forma for obtaining authorizations for launches and sub-orbital launches in the NSTP requires the relevant launching entity to provide a "space debris mitigation plan". Thus, the fact that applicants are required to provide their "space debris mitigation plans" signifies the proactive approach by the Indian government towards minimization of space debris.

Periodic updates:

The existing standards and guidelines in respect of space debris mitigation are revised on a periodic basis to accommodate new developments in this regard. For instance, the IADC Guidelines were revised in June 2021 to provide clarifications on parameters such as operational phases and re-entry risks. Similarly, the ISO Standards were revised in July 2019. Hence, it is crucial that countries also make corresponding revisions to their national policies and frameworks concerning mitigation of space debris and implement effective measures.

Concluding Remarks

Currently, there is no internationally binding treaty on space debris. Additionally, existing policies such as the IADC Guidelines, the COPUOS Guidelines and the European Code of Conduct are non-binding and voluntary in nature. The need of the hour is to evaluate the extent to which existing guidelines, standardization measures and best practices, for mitigating space debris, have proven to be helpful. If a majority of States have enforced useful robust national mechanisms, these guidelines may well have succeeded. However, in case these have been inadequate or unclear, a binding international legal instrument which would tackle such a problem in a uniform and coherent manner will need to be implemented. At the same time, one cannot lose sight of the fact that adopting mitigation measures, including compliance with the ISO Standards, may involve complex technology and

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high costs. Accordingly, the binding legal framework, if it were to be created, must uphold the overarching fundamentals of space law – principles of equality and non-discrimination.

Notes & References:

[*] Geetanjali R Kamat is an Ex-Associate at Touchstone Partners and Founder-Editor at IRCCL

[1] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) 1967, Art. VI.

[2] Outer Space Treaty, Art. VIII.

[3] Convention on International Liability for Damage Caused by Space Objects (Liability Convention) 1972, Art. II.

[4] Liability Convention, Art. III.

[5] Outer Space Treaty, Art. IX.

[6] *Ibid.*

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ARBITRATION OF SPACE DISPUTES: A REVIEW OF THE OPTIONAL RULES FOR ARBITRATION OF DISPUTES RELATING TO OUTER SPACE ACTIVITIES

Arthad Kurlekar[*]

Keywords: Arbitration – Outer Space – PCA Rules – UNCITRAL Rules

This year marks the ten-year anniversary of the Permanent Court of Arbitration ("PCA") Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (the "Rules"). With no publicly reported cases, the Rules are yet to gain popularity among potential users. A recent post, by Rosenberg and Dadwal highlights the conundrum stating that " the PCA has administered disputes relating to outer space, but in those cases, the parties arbitrated their disputes under the 1976 UNCITRAL Arbitration Rules rather than the PCA Outer Space Rules", attributing this to a lack of awareness of the PCA and its Rules.

The question remains whether the Rules offer anything to incentivise users to deviate from the well-trodden path of selecting the UNCITRAL Rules? To address this, the post evaluates the features of the Rules, which are arguably designed to better augment the resolution of disputes involving space law specific issues. The Rules have been inspired from the 2010 UNCITRAL Arbitration Rules with three major modifications concerning: (i) the scope of application, specifically adapting the Rules to all users, private parties, states and international organisations; (ii) applicability of the confidentiality regime and (iii) procedure applicate to experts and scientific and technical information.

The Scope of Application

The introductory section to the Rules demonstrates that the PCA foresees the potential users of the Rules to be a combination of States, private actors and international organisations. It thus states that the Rules encompass procedural tools which could be utilized by States, international organisations or private entities in resolving disputes with an outer space element. The flexibility of the rules is in-keeping with the nature and operation of outer-space activities. For example, the launch of satellites of a private state actor, which occurs through a government facility, can involve state and non-state actors, which in case of a dispute would require the

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flexibility afforded by the Rules. Article 1(1) of the Rules extends the application of the Rules to "a defined legal relationship, whether contractual or not". Together with the introductory paragraph, this leaves room for States to incorporate the Rules in their bilateral and multilateral treaties, or in statutes extending their application beyond contractual disputes.

To avoid issues of subject-matter jurisdiction, particularly on what constitutes "outer-space law issues"; Article 1(1) provides that the "characterization of the dispute as relating to outer space is not necessary for jurisdiction where parties have agreed to settle a specific dispute under these Rules". This particular phrasing side-stepping *rationemateriae* jurisdiction hurdles is also seen in the other subject-indicative rules published by the PCA on relating to the environment and natural resources. Accordingly, the applicability of the Rules is independent of their designation as those concerning "outer space law" issues, with the only requirement being the agreement of the parties. In theory, therefore, nothing stops parties from adopting these rules for any of their disputes so long as all parties to the jurisdictional instrument agree.

Article 1(2) of the Rules, another modification to the UNCITRAL Rules, expressly accounts for the fact that States may have disputes against not just other States but also against private investors capable of settlement by arbitration. Therefore, it provides that the agreement represents a waiver of immunity from jurisdiction. However, it also qualifies this by stating that agreement to the Rules is not an automatic waiver of immunity from execution. The assurance of a waiver of jurisdictional immunity in case of an agreement to arbitrate disputes, together with the need for an express waiver requirement for immunity from execution, reflect prominent viewpoints on the issues. Specifically, it allows for the party entering into the arbitration agreement an assurance that it would be enforced, while simultaneously also protecting a State's exercise over its critical assets in case of an adverse outcome. This arguably helps balance both Parties' interests. Thus, the Rules demonstrate that private users, and states (and indeed international organisations) are considered as potential users.

Moreover, the PCA states that the Rules have been designed to "reflect the public international law element that pertains to disputes that may involve states". This is

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reflected in the Rules, as an illustration, in Article 9 which provides for the possibility of five arbitrators, a procedural feature arguably typical to inter-state cases[1].

Confidentiality

Disputes involving elements of outer space law may have aspects including trade secrets, or issues affecting national security. As a result, Article 17(6) provides for clearly enunciated procedure to qualify documents as "classified" bolstering the confidentiality protections afforded to the Parties. The Tribunal is empowered to determine whether such information needs special measures of protection from disclosure, failing which it would cause serious harm to either party. If so, then, under Article 17(7) Tribunal has the power to determine the persons to whom the confidential information may be released and on what conditions. The Tribunal also has the power to decide whether a confidentiality adviser has to be appointed. Additionally, under Article 17(8) such a person would ordinarily be allowed access to the documents and then would prepare a report for the Tribunal on the specific issues designated by the Tribunal, without disclosing the confidential information to the Tribunal. These options, which the Tribunal is now expressly empowered to consider, help to address the potentially sensitive nature of disputes foreseen to arise because of the elements of outer space law involved.

Expertsand Scientific Information

As with arbitrations having technical components, the Rules envisage the appointment of a Tribunal-appointed expert (Article 29(1)), should the Tribunal consider necessary to help address the scientific and technical issues that may arise. Such issues can cover a broad range from technical specifications under a contract which would potentially require experts in the relevant sciences, to the determination and forecasting of losses accrued by a party which could potentially require forensic accountants, or a combination thereof.[2] As discussed above, the Tribunal may impose confidentiality requirements upon experts. Therefore, any appointed expert's purview is subject to any restrictions the Tribunal may impose on the basis of the sensitivity of the information (Article 29(5)). The balance achieved in these provisions is designed considering that some or all of the members of the Tribunal itself may not be leading experts in the relevant field and could be assisted by experts, while recognising the fact that parties may have serious confidentiality concerns with sharing such data with experts.

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Apart from experts, the Rules also envisage the possibility for the Tribunal to jointly or separately provide a "non-technical" document summarizing and explaining the background to any scientific, technical or other specialised information the Tribunal considers necessary to understand fully the matters in dispute (Article 27(4)). This could assist the Tribunal in contextualising any expert report and to fully understand the implications in light of the technical nature of outer space disputes.

These prominent modifications to the UNCITRAL Rules bring to fore the question of the suitability of the Rules to disputes relating to outer space issues vis-à-vis provisions of the 2010 UNCITRAL Rules.

The Rules present modest but important clarifications on all three aspects discussed above:

First, with respect to waiver of immunity from jurisdiction, the ILC has confirmed in Article 17 of its Draft Articles on Jurisdictional Immunities of States and Their Property 1991, that in its view, entering into an arbitration agreement results in a waiver of immunity from jurisdiction. However, a waiver mentioned as part of the Rules ensures that there is very little likelihood of any parallel proceedings in domestic courts in cases involving States.

Second, in terms of confidentiality, while the 2010 UNCITRAL Rules do not stipulate any specific obligation of confidentiality, Article 34 of the 2010 UNCITRAL Rules states that an award shall only be made public with the consent of all parties. A corollary of this is that parties have a duty to keep the award confidential, if either party does not consent. The applicable confidentiality regime under the UNCITRAL Rules can also be enhanced by encompassing confidentiality clauses particularly in the contracts/ instruments referring the matter to arbitration. The existence of confidentiality clauses in such contracts which may involve information protected by rights, with security implications or other sensitive purpose is unsurprising. However, clarifying and bolstering the regime applicable to confidentiality under the Rules provides clarity and added value to potential users.

Finally, the clarifications on the powers of the Tribunal to receive a non-technical document, and to appoint an expert, deal with the reality that a tribunal versed in legal matters may not be equally versed with the scientific and technical aspects in dispute, and might warrant (and benefit from) additional submissions either joint or

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separate to contextualise such information. While in principle, this matter can also be proposed and agreed under the 2010 UNCITRAL Arbitration Rules, the express reference to this power ensures more liberty in the hands of the Tribunal. These clarifications provide added value to potential users, but whether the Rules gain popularity with increasing activity of private actors in the space industry remains to be seen.

Any opinions or views expressed in the post are original, entirely personal and independent. Any views or opinions expressed do not represent the views of any organisation with which the author is affiliated at present or was affiliated in the past. It is also affirmed that the author has not received any funding from any organisation for the post.

Notes & References:

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[1] Article 4 of Annex VII of the United Nations Convention on the Law of the Sea provides for a five-member tribunal to be constituted.

[2] Kishenganga Arbitration (Pakistan v India), PCA Case No. 2011-01

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LOSING AFGHAN LAND, AND ALSO SKIES

Avantik Tamta[*]

Keywords: Consumer behaviour – Kabul airspace – Rawlsian political conception theory – Taliban

With the Taliban taking over Afghanistan, massive uncertainty has sparked off in the realm of aviation. Considering most flights connecting the Indian subcontinent to the West rely on flying over the Afghani airspace, the recent Notice To Airmen (NOTAM) suggesting airlines to reroute their paths so as to avoid Afghan airspace, comes as a significant damper. A closer look at the map and one would understand that the alternate to avoiding Kabul is to choose between the costlier and more inconvenient options of Iran, the Middle East and Belarus, which is infamous for arbitrary denial of flying permission. Insurance worries aside, both government and airlines remain sincere adherents to the idea of evading hazardous flying. The shooting of the Malaysian Airlines plane near eastern Ukraine in 2014, and the downing of the Ukraine flight in 2020 by Iran, instill vivid reminders of the perils of choosing to be adventurous in the face of caution.

Although experts believe that the conflict is not particularly going to affect global crude oil prices in the long run, it is safe to infer that the regional instability will surely shoot up the price of oil till a recognized government is formed in the country. The inflationary standards of oil, coupled with increased flying time has sort of created a double whammy for air travelers and commercial participants alike. At a time, when the aviation industry is still recuperating from the insufferable hurdles posed by the COVID pandemic, such turmoil is bound to test the melting point of insignificant players.

Furthermore, the radical alteration of consumer behavior, post the pandemic, has essentially eradicated the prioritization of business travelers, given how business operate online instead of offline in the prevailing circumstances. The consequence is the compulsive change in strategy- to reorient preference to suit the requirements of leisure travelers over business travelers.

Interestingly, be it business travelers who value time over money, or leisure travelers who value money over time, the instant need to avoid Kabul airspace deters

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intentions to favor either. Rerouting will force additional flying time, and the additional flying time will factor in fuel surcharges which will reflect in increased costs. Therefore, there is no real escaping for the aviation industry this time, particularly in respect of flights to and from India.

Given the lucrative source of revenue in doling out overflying permits, the Taliban is most likely to engage with countries in amassing such convenient contracting of financial wealth. Regardless of such an initiative, it is quite unlikely, however, that sovereigns are going to engage with the likes of Taliban in procuring such permit, primarily because such a give and take could evidence formal recognition of a Taliban government within sovereign quarters.

Even if hypothetically speaking, we were to assume a light at the end of a tunnel in the sense of overflying permits being put in place, airlines are most likely to continue avoiding use of Afghani airspace during Taliban rule. The duplicity of the terror outfit aside, the possibility of having to request emergency landing during the path of flying seems like an inconvenient reality for airlines to justify to its passengers, if choosing to fly over Afghanistan. Consequently, airlines are predicted to avoid the Kabul airspace irrevocably during the continuance of the Taliban as a pseudo-State entity.

Dwindling profits, and increased operational costs of west-east connectivity is going to reflect in the substantial constriction of the frequency of flights flying in and out of New Delhi. While the assumption is still based on conjecture, one would assume that the consequence would also factor in within the future of India's geopolitical nexus with its influential diplomatic partners in the west. While most of the world leaders, led by the People's Republic China and Russia, have engaged in a strange strategy to bid time for the Taliban in amassing political momentum, it is absolutely crucial for India to effectively maneuver its influence as the chair of the UNSC in mobilizing international isolation of the Taliban. Only then can there be a sincere attempt at regaining the Afghani land for the Afghan people. Though the need to avoid military action is paramount, one must remember the Rawlsian political conception theory of Human Rights, which suggests the international community must use force when the factual sovereign unleashes terror on its own citizens. A duty lies on the international community to safeguard the interests of their

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international citizens when subjected to the tyranny of one particular sovereign/sovereign-like entity.

Even as countries await to successfully repatriate their citizens out of Afghanistan, there is no clarity regarding the future of Afghanistan and its people. If India is to hold on to its influence in the subcontinent, it must bypass Chinese influence in convincing the sovereign community of the perils of formally recognizing a Taliban government.

Profiteering and sovereign interests aside, we have a people looking to the international community for support. It will be nothing short of a betrayal if we were to defer the security of the people to selfish interests of artificial relevance quantified within the interaction of international powers. One must remember that we are dealing with an international crisis wherein lives are at stake and the cultural identity of a nation is being held at a ransom. The situation is a dire existential crisis for a community of people, and not an invitation for a series of proxy wars to be fought by nations. Consequently, any possibility of advantageous predicament to any international player must solely be co-incidental to the welfare and interests of the Afghani people, and not be prima facie driven by such vicarious intent. With that being said, one can only hope that United States, United Kingdom, Russia, China, India and the various other powers that be, let their differences aside for a moment to truly appreciate the difficult times the people of Afghanistan are pulling themselves through. One hopes that they will collude just this once, to favor stability over instability, and permit the natural course of unhindered business to flow, err, take off.

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EVOLVING CUSTOMARY LAW IN OUTER SPACE FRONTIER SETTLEMENTS

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Keywords: frontier settlement - human nature - natural law - international customary law - outer space

International customary law forms the basis of many international agreements. However, it should be uncontested that there is, as yet, no crystallization of international customary space law. Customary law takes generations to develop through cultural negotiation and the development of practice and custom accepted as law.[2] Laws and practices addressing space exploration and the frontiers of the cosmos are simply too recent. Should the human species survive to enable deep space exploration and frontier settlement beyond Earth, humanity will have an opportunity to develop new customary laws with the added benefit of the accumulated knowledge of human history and modern technology. This diverse human record of invention, achievement and strife was not available to the men and women on the frontiers exploring planet Earth in our previous history of expansion.

While international and national space law currently dominate discussions of what legal and social structures are best for humanity in outer space, such a focus is inherently limited to functional considerations of how to enter orbital space safely. For guidance on human exploration and settlement in the farther reaches of space, what is needed is a more inclusive and informed understanding of human nature. Modern conceptions of natural law, informed by social science research, may be helpful to move beyond the constraints of narrow commercial and governmental interests.

International Law in Orbital Space

In orbital and sub-orbital space, when the technological capacity of space exploration was more limited, the aspirational international agreements to engage in peaceful uses and cooperation in space were easily supported among nations. However, with the growing reality of both governmental and private commercial entry into orbital space, those ideals are undermined by existing suspicions and competition among state and private actors on Earth.

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Outer space is jurisdictionally stateless under international law, with multiple resolutions adopted by members of the UN General Assembly to prevent an arms race in outer space: "Reaffirming the will of all States that the exploration and use of outer space, including the Moon and other celestial bodies, shall be for peaceful purposes and shall be carried out for the benefit and in the interest of all[3] countries, irrespective of their degree of economic or scientific development." However, "will" is not a mandate, and the General Counsel of the United States Department of Defense has asserted that:

None of [the outer space treaties] has any specific provision that indicates whether the parties intended that the agreement apply in wartime. There appears to be a strong argument that the principle of noninterference established by these agreements is inconsistent with a state of hostilities, at least where the systems concerned are of such high military value that there is a strong military imperative for the adversary to be free to interfere with them, even to the extent of destroying the satellites in the system.[4]

If matters of distrust on Earth have not been resolved between nations, why should such nations agree to different terms in a new space frontier that is equally, if not more, perilous? International law is imbued with concerns related to distrust and the potential for conflict.

An additional criticism of use of international law in space is that such agreements not only reflect the dominant voices of the first nations in space, but that they are predominantly Western and disregard non-Western perspectives and cultural strengths.[5] This is demonstrated by the tacit unwillingness of nations consistently to abide by the principles of treaties, declarations, and resolutions which they may have signed and the lack of clear mechanisms of enforcement.[6] Arguably, international customary law has been a product of a largely Western, colonial, and capitalist interests. A combined functionalist and humanitarian focus in space law would do well to remember this history.

Natural Law Among the Stars

If the legal structures promoted by international efforts in space appear to be products of capitalist conquest, it is no surprise. Satellite use, mining celestial bodies, space tourism, and achieving scientific and technological advancements in space for

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use on Earth all appeal to a profit motive, which is not a problem in itself. If humanity seeks to achieve competitive gains, then perhaps this is simply part of human nature. Every large civilization, past or present, Western or not, has engaged in conquest and social disruption throughout human history. Then why do the outer space treaties and national space initiatives repeatedly speak of peaceful uses? The Artemis Accords, for example, seeking international and civil cooperation "for peaceful purposes" in the exploration of the Moon, Mars, Comets, and Asteroids, are currently embraced by 12 countries – Australia, Brazil, Canada, Italy, Japan, Luxembourg, New Zealand, the Republic of Korea, Ukraine, the United Arab Emirates, the United Kingdom, and the United States.

Natural law, granted a Western political and philosophical concept, provides a framework to answer this question. Grotius, the purported father of international law, professed in 1670, a time of conquest and war, that nation states needed to create a set of unifying, universal principles "out of the chaos of lawless and unreasoning strife."[7] The unifying growth of human civilizations is explained through natural law as humanity's observance and attempted replication of order and harmony in the universe within human social structures.[8] That is, human nature seeks to create order. Applications of international law to orbital space law, such as enterprises on the International Space Station or Moon landings, are tethered to an understanding of ourselves on Earth and what enforced order is needed. But would this be the case for human settlement in the frontiers of outer space far beyond Earth? Would international law as we know it effectively guide future human civilizations if it is a product of conquest and cooperation on Earth alone? This is unlikely given the inscrutable nature of what is to come. The human species itself, however, is not an unknown factor, for it has not biologically evolved other than in minute physical ways for millennia and may retain key aspects of its social nature for many more millennia.

So who are we? Natural law theorists of the past, such as Rousseau and Locke, were all Western men who posited that, as a matter of reason within human nature, our species is inherently interested in survival and therefore will engage in violent self-defense.[9] Concepts of liberty and equality underpinning the nation states of the West were intended to create a utilitarian social compact of peace and cooperation that supported human survival as a society. However, in practice many were subjugated and enslaved to ensure the success of a select segment of society, colonial, male, and

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affluent, a reality both justified and criticized by international customary law.[10] Despite its apparent manipulation, what the natural law framework continues to provide is a recognition that there may be commonalities in our single human species across cultural, class, racial and gender identities that would potentially connect and unify us. While current political ideals may never be universal, if seen as imperialist or too narrow, today we have the benefit of modern understandings of psychology, anthropology, and human biology to help us better understand human nature and what makes us thrive together as individuals in society.

How Humans May Thrive in Outer Space

Both social and evolutionary anthropologists put forth that humanity builds its greatest trust within the family structure, in part because the human species has such a long period of childhood development.[11] However, family structures vary, and strict gender-based roles in society, based on assumed biological differences, have been more likely to emerge when women have had little control over reproduction. Positive law is often unneeded in the day-to-day practices of individuals in family life and small societies, where trust, cultural familiarity, and affection may lead to cooperation and negotiation. For example, even in times of conquest, colonial powers more often left alone matters of family law, which were deemed more inherently stable than matters of commercial law and trade[12]. Therefore, while an interest in survival and self-defense are shared in natural law, arguably so are a duty of care and an appreciation for generosity and affection, a factor often left out by early natural law theorists. Also, an interest in creativity, imagination, and innovation are indelibly human, and would need support to sustain humans in an isolated outer space frontier.

Far into the future, impositions of current international law, largely Earth-based, will have little to say regarding how human settlement should survive as a society. If human settlements in outer space survive, and even thrive, it will not be due to complex, restrictive legal structures, but to the unwritten natural law of human nature which is mutually cooperative and supportive in smaller societies and family-based groups. Indeed, in contrast to much of the natural law philosophy of the past and its lack of mention in international space law, empirical study has shown that healthy emotions derived from close human relationships "appear to be among the most stable, fundamental features of human nature." [13]As new customary law

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emerges in outer space settlements, the natural risk of human conflict should be tempered by the human ability to understand itself and what it needs. As Sun Tzu stated 2,500 years ago, "[t]he art of war teaches us to rely not on the likelihood of the enemy's not coming, but on our own readiness to receive him," but in this same work he acknowledged that conflict is meant to sustain peace and that soldiers approaching home will be more likely to leave the ranks early to see their loved ones.[14]

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IS THERE AN INDIGENOUS RIGHT TO SPACE?

Valmaine Toki[*]

Keywords: Indigenous Peoples – Space – Treaty rights – United Nations - Declaration on the Rights of Worldview

Introduction

Space is often hailed as the final frontier to be conquered. The primary instrument that governs this desire is the Artemis Accords, announced in October 2020 by NASA, the National Aeronautics and Space Administration,[1] an independent American agency responsible for the civilian space program, aeronautics and space research.

The Artemis Accords is an agreement with international partners and commercial entities for lunar exploration and beyond, describing "a shared vision for principles, grounded in the Outer Space Treaty of 1967, to create a safe and transparent environment which facilitates exploration, science, and commercial activities for all humanity to enjoy."[2] While the purpose of the Artemis Accords is to 'establish a common vision via a practical set of principles, guidelines, and best practices to enhance the governance of the civil exploration and use of outer space with the intention of advancing the Artemis Program', the Accords is silent on whether this extends to Indigenous peoples.

The Artemis Accords envisages the landing of the first woman on the Moon by 2024. With this in mind, Professor Melissa de Zwart recently asked the questions;[3]

- "What are the laws that will regulate the sustained presence of humans on the Moon and their use of resources?
- How will competing uses of the Moon be governed and how can international law assist with managing any resulting conflicts or tensions?"

This raises two further questions:

- Can the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) as an instrument of international law assist to manage the fundamental rights including those that extend to celestial bodies?

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- Does the Indigenous philosophy, or world view, support such a right?

To answer these questions this short piece will review the fundamental rights articulated in the UNDRIP before providing a short narrative on Indigenous world views and treaty rights as they apply to Māori.

United Nations Declaration on the Rights of Indigenous Peoples

The fundamental rights for Indigenous Peoples are recognised and articulated in the UNDRIP. The key right of self-determination is captured in Article 3.

The UNDRIP was adopted by the UN General Assembly with a majority of 143 states in favour in September 2007. Even if the UNDRIP is soft law and not legally binding until incorporated into domestic legislation, some jurisdictions have included it in their constitution. For instance, Bolivia and Congo.[4]

In addition, some jurisdictions have taken steps to promulgate enactments that promote the UNDRIP. For instance, the Canadian government has stated that, "Government of Canada must take all measures necessary to ensure that the laws of Canada are consistent with the UNDRIP, and must prepare and implement an action plan to achieve the objectives of the Declaration." This is reflected in the Statutes of Canada 2021, Bill C-15, a framework respecting the UN Declaration on the Rights of Indigenous Peoples, assented to on June 21, 2021.

In the absence of direct incorporation by a statute, there are different methods of recognising international human rights instruments through recourse to administrative law. The (outdated) concept of legitimate expectation in Australia and a mandatory relevant consideration in New Zealand, have been employed to treat unincorporated international obligations, such as the UNDRIP, as considerations for the decision-maker. Also, the presumption of consistency, a common law principle of statutory interpretation, recognises that the Parliament is presumed not to legislate intentionally in breach of its obligations.[5]

The relevant obligation is found in Article 25 of the UNDRIP:

"Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used

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lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard."

Read together with the key right of self-determination, irrespective of national adoption of UNDRIP, this clearly provides the right for Indigenous peoples to maintain and strengthen their distinctive spiritual relationships with their traditionally owned or otherwise occupied and used lands, territories and other resources. The inclusion of the term "otherwise" implicitly extends to land and territories within the celestial or non-earthly realm.

Indigenous Philosophy – World View

Aotearoa – New Zealand

Although from different global regions Indigenous peoples share commonalities regarding their 'world view'. For the Māori, Indigenous peoples in Aotearoa, New Zealand, their world view is premised on cosmology. This cosmology includes various realms from which life is derived. Within these realms is *Io Matua Kore* where all celestial entities exist and originate. The steps through these realms assist to govern and understand the relationship between the animate and the inanimate. For instance, within this cosmology is the separation of *Ranginui* and *Papatūānuku* that resulted in the developing of different ecosystems.[6] This separation was all part of the *whakapapa* relating the gods, the natural world and humans. *Whakapapa* connects Ma□ ori to the environment.[7] Within this philosophy is understanding that these elements are our relations and the concept of *whanaungatanga* or relatedness extends this obligation to non-human or inanimate objects.[8] Customs were also developed premised on this cosmology. Although there was no concept of ownership per se the obligation to look after the resource remained.[9] Resources had their own *mauri* or life-force and were perceived as treasures that required protection.[10] The underpinning doctrine was *Tikanga Māori*.

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Tikanga Māori within the celestial realm denotes this environment as inter related. The *mātauranga* or traditional knowledge of this celestial realm where the movements of constellations, phases of the moon, rising of the stars were well [1]known and assisted with the precise understanding of seasons and the well-known Māori navigation through the Pacific. *Kauwaerunga* refers to the celestial knowledge that is linked to the cosmology and creation stories.[11] This knowledge was evident before colonisation and pivotal to *Tikanga Māori* and *Te Ao Māori* or a Māori world view from which denoted the relationships, framework and guidance for rights, responsibilities and duties between the animate and inanimate, with achieving balance as the aim.[12]

Treaty of Waitangi – Treaty Right

In Aotearoa, New Zealand, Māori entered into a Treaty of Waitangi (Treaty) with the Crown. The Treaty is recognised as a constitutional canon within the unwritten constitution of Aotearoa, New Zealand and a document of extreme importance as noted by the judiciary.[13]

Article 2 of the Treaty's English text guarantees certain rights to Māori including a right to all *taonga* or treasures.[14] This includes their *mātauranga* or traditional knowledge of the celestial realm, knowledge upon which practical activities such as planting gardens and fishing were based. The traditional knowledge associated with the celestial bodies enabled the remarkable and renown navigation of the Pacific.

In sum, the rights available are:

(a) First, the international instrument, UNDRIP, that recognises the right for Indigenous peoples, such as Māori, to maintain and strengthen their distinctive spiritual relationships with their traditionally owned or "*otherwise*" occupied and used lands, territories and other resources, such as those within the celestial realm in Article 25 of the UNDRIP,

(b) Secondly, the underpinning *tikanga* or worldview that links Māori indisputably to the celestial realm., and

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(c) Thirdly, a domestic Treaty right, for Māori through the rights guaranteed under the Treaty including the rights to their *taonga*, their *mātauranga* or traditional knowledge of the celestial realm.

These provide an irrefutable right to space for Indigenous peoples and the celestial realm. Similarly, in recognition of the importance of Indigenous peoples' rights, world-view and any relevant Treaty rights, scholars have urged the Canadian Space Agency to include Indigenous peoples in this project.[15] Understanding the historical adverse impacts of colonisation on Indigenous peoples this Canadian pre-emptive approach is welcomed to avoid any further marginalisation or alienation for Indigenous peoples to their *taonga*. To not recognise these rights perpetuates the outdated approach of colonisation. To continue to offer and consider economic or commercial gains without Indigenous participation further exacerbates the adverse effect of colonisation.

Conclusion

The Artemis Accords refers to creating "a safe and transparent environment which facilitates exploration, science, and commercial activities for all humanity to enjoy." In addition the purpose of the Artemis Accords is to "establish a common vision via a practical set of principles, guidelines, and best practices to enhance the governance of the civil exploration and use of outer space with the intention of advancing the Artemis Program". Aotearoa, New Zealand has offered support for the UNDRIP and Aotearoa, New Zealand has also signed the Artemis Accords earlier this year in May. Thus, Māori are entitled to the safety promoted by the Accords and the ability to contribute to the 'common vision' and 'set of principles'.

With the race to conquer space well and truly afoot, it is time to raise the issue of where Indigenous rights are accommodated within this race. The Artemis Accords is silent as to Indigenous rights, however key international instruments, doctrine and domestic treaties recognize that a "right to celestial bodies" is evident. As the UNDRIP is an international instrument, this could assist in managing any conflict and resolve any opposing interests or tensions that other nation States may have regarding recognizing these fundamental rights.

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SPACE TRAVEL: SELECT LEGAL ISSUES

G. S. Sachdeva[*]

Keywords: Dennis Tito – G-factor – Planetary habitation – Pollution – *Volenti non fit injuria*

Branson and Bezos, in maiden commercial flights of their respective enterprises, Virgin Galactic and Blue Origin, have ushered in an era of commercial space travel, transportation and tourism. This development offers an opportunity to tariff-paying passengers for a trip of thrill, pleasure, recreation or entertainment. Much of the world clapped at the milestones in pride, exultation and enthusiasm but 'two' swallows do not make spring. In order to become a viable operational transportation system with public offer of tariffed-travel service open to all, without demur or discrimination, and with competitive options and choices, space carriers would need to introduce regular space flights with fixed time-schedules. Occasional charters or "Inspiration" flights do not qualify as commercial operations or public service. Further, assured standards of passenger safety are another public concern and need institutionalisation of an integrated system of space traffic management and space situational environment. Thus, it seems a tall order, which as yet fails to fit, though implementable in the near future.

Further, the passengers of these two trips are not the first commercial space travellers. In fact, the very first fare-paying space-passenger was Dennis Tito in 2001, who believably, paid millions of dollars for a genuine space trip arranged by Roscosmos and stayed at the Soviet quarters of ISS for one week. Nevertheless, this oncoming seems obvious and imminent. Even, the cost of ticket per passenger is likely to reduce progressively with competition from Boeing, Space X, Orion Span, Bigelow and others. Hopefully, the tariff may become an economical bargain to fit within common person's finances and dream.

Commercial operational travel in space may soon expand to space tourism with orbiting resorts for an exhilarating experience, hospitality on celestial bodies for 'stay-cationing' for joy and ego-boost and planetary habitations[2] for permanent emigration. The future scenario limned here is no oneiric vision but a millennial reality. Interested tourists, space enthusiasts and one-way emigrees have already

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queued up for booking and are only waiting for the opportune time and regular space travel to become operational.

The space carriers are advertising a life-time experience full of excitement and unique pleasures. The promised thrills relate to floating in micro-gravity, honey-mooning in space, a view of the mother earth in cosmic perspective, a spectacle of universe in *lumiere* splendour and many more. With the anticipation and elation of space travel, a passenger may ignore some attendant problems and subsequent hassles which should be clearly understood before the actual travel. Select responsibilities are discussed here.

A Caveat for Space Passenger

First, bodily health and mental fitness are important. Space travellers, beware! Space travel is no bullock-cart ride nor is the space capsule commodious enough for desired comfort. Therefore, space travel requires the highest standards of physique, mental agility and psychological preparedness for a unique yet a hard trip of endurance. Space travel involves inconvenience of cramped physical spaces with claustrophobic environment which may be difficult to withstand. Further, space travel entails spiralling effect, high velocity impact and repercussions of high G-factor which may cause bodily discomfort, pain in muscles, blood-rushing, etc. Apart from headache or giddiness, vomiting may also occur.[3]

In order to get used to such inconvenient and never-experienced conditions, one may require training in simulator-capsule creating launch parameters and zero-gravity environment for practice in floating techniques and to get 'habitualised' to unaccustomed effects of space travel. In the past, a few trainee astronauts have been declared unfit for medical reasons. Similar rejection and refusal for space flight, in medical screening or during training, should be no surprise for fare-paying passengers, nor constitute a cause for litigation.

Second important aspect of personal responsibility pertains to scrutiny of contract for space travel for liability clauses in the event of an injury to or death of the passenger. In such risky and hazardous flights, the commercial carriers tend to contract out most of their liability under legal maxims of *volenti non fit injuria* or *non cogit ad impossibilia* or *abundanti cautela,* and others. The respective meanings of these are that in voluntary acceptance of the known risk, injury is not admissible; that it

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was humanly impossible to avert the event; that enough care and caution had been taken to avoid the accident. This may need consultation from a lawyer whose professional examination and advice will be worth the effort and expenditure. However, standardisation of the space travel contract may be expected on the lines of the Warsaw Convention, 1929[4], relating to commercial aviation.

Third caveat is that the space passenger would find it well-nigh impossible to gather factual evidence of the accident or negligence of the carrier for the plaint. And in law, it is important to establish a fault, neglect or failing to be entitled to a claim of compensation. In fast moving machines and events, even eye witnesses may falter in recapitulating the precise sequence of events. More so, wreckage is almost always protected and secured by investigation authorities to obviate tampering by vested interests. Therefore, the space contract should include the evidentiary principle of *res ipsa loquitur* to shift the burden for fool-proof defence on the carrier. This is now an established doctrine in Air Law.

A Word of Caution

The excitement of oncoming space travel is genuine and the operators claim of long queues for sub-orbital flights.Reliable projections estimate that the number of commercial flights may increase from 10-a-year to about 360 annually in a decade. Possibly, with increasing number of space-enthusiasts and competing carriers, these expectations may be surpassed much sooner.

However, scientists subdue this exultation with a serious woe of pollution of the atmosphere by burnt solid fuels from rocket exhausts. Their despondence increases because hybrid fuels, liquid and solid, have also revealed no major drop in the pollution level. The emitted particles, howsoever, small in size and light in weight, tend to stay put, almost *in situ,* for long periods. In the 1990's, research was conducted, by Rosenlof with teams from NOAA, NASA and the US Air Force, on pollution by Shuttle launches. Studies revealed presence of chlorine emissions from launch rockets and their chemical reaction showed adverse influence on ozone reserves. Regrettably, there has not been significant break-through in safe fuels, and rockets generating ozone-damaging substances are still in use as work-horses.

It is conceded that the studies conducted so far have been preliminary in scope, limited in time and localised over Florida necessitating more empirical data collection

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and analysis. Further no such studies seem to have been undertaken by Russia or China, at least not in public domain.Nevertheless, existing results indicate that atmosphere and stratosphere are undergoing alteration in their character and content yielding strong hints at adverse changes in global climate and weather patterns. As a result, the eco-system of total atmosphere seems vulnerable and at risk as revealed by ground reality.

World Meteorological Organisation has already observed widening of the ozone holes and indicated at the possibility of creating new such holes near space-ports.It has, accordingly, declared rockets as a potential concern and future threat to the well-being of mankind. This calls for dedicated research on less-polluting fuel substitutes. May be, tri-propellant engines using kerosene or air-breathing engines can lead to a solution. But engineering history shows that these objectives require incremental development through in-service evolution rather than quantum leaps in technology.

The zeal for the novelty of space-trip and ego-satisfaction at the experience is causing rush for bookings. It is apprehended that competing space carriers, in their effort to harvest early profits, may abnormally escalate the number of launches which could adversely affect the ozone layer. Thus, there is reason for "eco-anxiety" with a shaky validation for the *causecelebre*of space travel and tourism. Possibly, the economic benefits and multiplier effect of space travel and space hospitality may turn out to be unconscionably high in terms of environmental costs and equally unpredictable in consequences for humanity.

Although, space travel may have to be held accountable for the consequential pollution, yet this development cannot be stalled. We have to find a way to co-exist. Perhaps, one option could be to restrict and regulate launches for commercial space travel in the current decade; and concurrently accelerate research for greater clarity on the flagged adverse impact. It will be wise to act in time before it is too late and beyond redemption because humanity deserves, *ergaomnes*, clean atmosphere and space environment.

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[2] For example, Woerner's Moon Colony or the Mars Village.

[3] This feeling has been experienced by astronauts even in repeated flights.

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[4] The Warsaw Convention, 1929, has since been superseded by the Montreal Convention, 1999.

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MARS4 METAVERSE, NFTS, AND THE FUTURE OF SIMULATED SPACE PROPERTY RIGHTS

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Keywords: Blockchain – Cryptocurrency – Outer space – Property rights

The usage of outer space resources is currently subjected to the restrictions imposed by international instruments like the Outer Space Treaty, 1967[1]. In particular, Article II prohibits national appropriation of the outer space or any celestial body by any means including use and occupation, which ensures that no State can lay claim to property rights to the space or such bodies, nor prevent any other State from using the same. In addition, Article I of the Treaty addresses the exploration and use of the outer space along with right of access, Article VI requires every State to authorize and supervise all activities by its nationals in the outer space and shoulder responsibility for the same, and Articles IX Article XI mandates the States to keep the public, other States, the global scientific community, and the UN Secretary General informed of all their space-related activities, especially the ones that may interfere with peaceful use of space by other States. The application of these provisions towards the development of a property rights framework for the outer space is fraught with debates. Instances of such debates include questions like whether the principle of non-appropriation referred to in the Treaty may translate into restrictions if not outright prohibition of ownership of property rights in space, whether provisions like Article II apply to only space or also the natural resources occurring in it, whether such provisions impose any obligation on the private parties too apart from States, and whether the States themselves being deprived of appropriation power, can in reality validate any property rights claimed by their nationals in space. In addition to the Treaty, the Moon Agreement, 1979[2] and recent initiatives like the Artemis Accords also bear relevance to this evolving discussion on property rights and resource usage in outer space.

Technology seems now all set to add further layers of complexity to this already complicated debate in international law. The case of the MARS4 project serves as a prime example. The blockchain project involves creating a simulated metaverse ecosystem that has been modeled on the planet Mars (data obtained from the 3D Martian Model available in the NASA database). The mars4.me virtual reality

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platform will allow the users to experience identical planetary conditions in the metaverse. They will also be able to obtain terrestrial rights over the simulated Martian property and develop, terraform and customize such property at their discretion. Further, the owners of such property can mint exclusive Non-Fungible Tokens or NFTs that will draw upon the value of the property owned by them in the metaverse; ownership of such Mars Land NFTs (currently 99888 pieces in existence) will also generate a stream of passive income for them within the metaverse.[3] The income will be in the form of MARS$, the Ethereum cryptocurrency (Standard E) network-based currency that can in turn be used for trading and minting more NFTs within the metaverse; further, as the demand for participation in the project increases, so will the demand for NFTs and by extension, demand for this currency, which can then be traded in exchange for conventional currencies in the real world. These NFTs are therefore meant to serve both as evidence of ownership of virtual land, as well as a means of investment within the MARS4 platform. The currency is already available for purchase on cryptocurrency exchanges like SushiSwap and Bittrex, and the NFTs are going to be available for purchase from January 2022 onward.

The twin tokenomics and token redistribution (MARS$ and Mars Land NFTs) and the principles of gamification (application of elements of game design and game principles of task-based rewards to non-game scenarios including systems, organizations and services) collectively form the distinct characteristics of this entire project. The project also has supposed long-term goals such as to ensure that the NFT-owners via a decentralized autonomous organization will be able to eventually control the decision-making process for the entire virtual platform, and that a foundation is established from the proceeds of the project, which will have the resources to fund space-related startups in the initial stage.

While the NFT boom is currently being perceived all across the global financial market, there are several emerging legal concerns surrounding their use, including the lack of accompanying intellectual property rights, the risks involved in the trading of NFTs and fractionalized NFTs that are yet to receive regulatory global recognition as valid securities (registered or otherwise), the possibility of application of anti-money laundering regulations to NFT transactions and resulting lawsuits, issues related to privacy and data safeguarding, possibility of reneging on royalty payments by shifting the NFT to different jurisdiction/market via digi-wallets,

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providing for estate and sequel planning for NFTs based on domestic laws, taxation concerns and many others. All of these regulatory concerns undoubtedly hold pertinence with regard to the MARS4 project too, as do the respective stances adopted by the multiple national regimes about applied blockchain technology and cryptocurrency.

However, this post is meant to consider the status of the project and the property rights being offered by it in the context of the outer space and celestial bodies and related property regime as envisaged under international law. While Mars is a celestial body that should fall within the ambit of the non-appropriation principle, the simulated version of the planet in the form of virtual reality is arguably located on Earth itself. Given the oft-vague provisions of the Outer Space Treaty insofar as even traditional property rights in outer space are concerned, and the lack of popular ratification of other relevant existing instruments like the Moon Agreement, the rights to own land in celestial bodies and to use their natural resources are contentious at best at this stage. While the power to access, use, and dispose of resources occurring in space and such bodies is not notionally against the principles that the Outer Space Treaty stands for, it is a matter of fact that the Treaty had never been meant to usher in a stable property rights regime.[4] With technological advancements disrupting even well-established legal regimes across multiple spheres, it is unsurprising that the existing space law regime appears to be considerably unprepared to deal with property rights leveraging space-based resources like the MARS4 project is purporting to do. While the broad acceptance of the Outer Space Treaty principles by State Parties have led to creation of customary law and practices[5], it becomes increasingly clear with developments like this project that predictable property rights in or related to outer space is far in the making at this juncture of international law. However, one must also acknowledge that through persistent efforts, occasional breakthroughs have been possible in the past such as the recognition of the first reasonable user principle in relation to geostationary orbit usage and according protection to such users from subsequent harmful interference via regulations of the International Telecommunications Union.

In addition, the debate as to whether virtual reality based on space objects and resources should at all be governed under the umbrella of outer space law is very much a continuing one. One may even argue that the existence of the MARS4 project does not in any way preclude other private entities establishing identical or

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similar metaverses about the same or other celestial bodies (assuming they get the necessary licenses to use the relevant celestial data and models) –this would make such property rights and their underlying value at least partially non-exclusive and therefore render their enjoyment non-adverse to concepts such as non-appropriation and the common heritage of mankind. While the days of Robert C. Coles and his Interplanetary Development Corporation, or Dennis Hope and his Lunar Embassy Commission selling land rights on the moon are now long past, those instances clearly taught us valuable lessons about the ambiguity and lack of predictability of the space law regime dealing with individual claims of ownership of the outer space and celestial bodies. One hopes that armed with such lessons, the legal regime applicable to the governance of outer space will proceed to evolve in an organic manner and transform possibly disruptive technological growth as evidenced by the MARS4 project into events enabling such evolution and growth.

Notes & References:

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[1] The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 1967.

[2] The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1979.

[3] *Id.*

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RESPONSIBILITY FOR ACTIVITIES IN OUTER SPACE

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Keywords: Article VI – Outer Space Treaty – Private Entities – State Responsibility –Ultra Vires

Outer space has always fascinated humanity, which continues to be so in the current day. Private entities are looking to outer space as never before with tourism flights, space resources extraction, and even space beer. As most of these activities are done in the interest of the private entities instead of the international community as a whole, debate on private activities in space has attained significance. Is space tourism just rich people playing around and destroying the environment? Whether resource extraction on the moon is in conflict with the Outer Space Treaty? These are just a few of the questions that have arisen in this context.

No matter what side one is on in this relevant debate, a fundamental and older question is; to what degree a state is responsible for the acts of private entities?

Outer Space Treaty

Article VI of the Outer Space Treaty[1] by the first look answers this question when it states that, state parties shall bear international responsibility for national activities, no matter whether it is being done by a state organ or by a private entity. It also points out that the state must authorize and supervise the activities of private players.

Article VI is quite a deviation from the normal customary rules of international law for state responsibility, which is found crystallized in the Articles on State Responsibility[2]. Under the rules of the Articles on State Responsibility a state will be responsible for internationally wrongful acts if a conduct consists of an action or omission that is both attributable to the state, and is in conflict with an international obligation of the state.[3] If the act is conducted by a private entity, certain criteria must be fulfilled for the act to be attributable to the state.[4] The criteria vary but there must be some sort of connection between the state and the wrongful act of the private entity like the state authorizing or instructing a private entity to do such an act or the state acknowledging such an act as its own.

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Attributability in the Articles on State Responsibility operates as a lower limit for fixing responsibility on any state. Private entities engaging in theft, murder or other offenses would face individual responsibility and state wouldn't be responsible unless the action can be said to be under the authorization or instruction from the state (and thus attributable). When Article VI of the Outer Space Treaty attributes every activity in outer space to the state, the question would arise on the responsibility of states under the Outer Space Treaty for every tort or a crime committed by the private space entities.

Responsible for what?

Some scholars have pointed out that it can be claimed that the duty of the state can be confined to authorization and supervision.[5] Other scholars are arguing that Article VI attributes all actions, and thus responsibility for every action of a private entity is on the state.[6]

While discussing authorization for the actions by the private players, it has been argued that there has to be a lower limit so that an astronaut needing to brush his teeth does not require to ask the national authorization agency for permission.[7] The same can be said for what actions can be attributed to the state. Bin Cheng discussed that the responsibility could have a wide and a narrow interpretation. The narrow interpretation being that the state is responsible for its normal obligations under international law and would also be responsible for actions by private entities as if they were made by a state agency. The wide interpretation would be that the state is responsible for all actions of private entities.[8]

However, even the narrow interpretation of Bin Cheng still offers a broad range of activities that the state may be responsible for. Thus, a heavy burden of responsibility is imposed on the state, which seems to be undesirable. Also the requisite clarity on the authorization and responsibility of the state for private actions is found missing in these arguments.

Article VI does specifically mention that the actions must be in conformity with the Outer Space Treaty, and thus, it does seem obvious that at least any action in conflict with the Treaty would call upon responsibility. A follow-up question could then be: Is the state responsibility limited to authorization and supervision of private entities or does it stretch beyond to cover the breach committed by private entities? This

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matters in the situation where a state implements laws regulating private entities in outer space, and only authorizes activity in space in conformity with the Outer Space Treaty. If the private entity then goes against the authorization and commits a breach of the Outer Space Treaty, concerns would arise in fixing responsibility as it is unclear whether the state is directly responsible for the breach or for not preventing the breach by the private entity.

Article VI is famously a compromise between the ideology of the USA and the Soviet Union, where one party wanted free access to space for private entities, and the other wanted to only allow the states to carryon activities in outer space.[9] So it is probably safe to say that the intention was to ensure that the states took the activities of private entities in outer space serious, and that they therefore were directly responsible for the action. However, under the changed circumstances arising out of the increased private space activities, it stands as a problematic proposition.

Application of Public International Law

Article III of the Outer Space Treaty states that all space activities must be in conformity with the public international law. Many states have applied this in their authorization process stating that the activity must not conflict with their international obligations.[10] Sensible as it may be that international law applies to space; however, this is where we find the aggravation of the problem. Many criminal activities performed by private entities may fall within the ambit of breach of international law upon attribution to the state.

Many different situations could arise. Would every possible murder on the moon be classified as a state assassination? Would theft in a space hotel be attributed to the state? If this would be the primary interpretation of Article VI of the Outer Space Treaty, most states would probably halt private entities from going into outer space. Such a harsh interpretation would confine the humanity to Earth, which is unwise from any perspective.

Solution?

What then would be the minimum threshold for attributing private activities to the state? The Draft Articles on State Responsibility does contain the concept of "Ultra

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Vires".[11] When a state agent or organ exceeds authority, the state shall still be held responsible for the actions, if the agent acts in the capacity it has been appointed. So, if an agent has been empowered to exercise governmental authority, the state has responsibility, unless it is clearly outside the function the agent is entrusted. This is of course not directly applicable to the situation at hand as we are dealing with private entities. The essence of the principle could however be used. When an authorized private entity performs activities in outer space, it can be said to wield some kind of state authority, and all of its actions under authorization can be attributed to the state.

It could then be said that if the private entity acts outside the scope of the authorization it should be examined if the entity at least still acted within the capacity of the authorization. This should at least sort out many of the actions done entirely in a private capacity, like for example, murder, theft, extortion etc. Whereas the actions in violation of essential principles of the space treaties, for example, an action contrary to the non-appropriation principle, using nuclear weapons or weapons of mass destruction, contaminating the outer space and celestial bodies and such, would trust responsibility upon the state. Thus, the use of the principle of Ultra Vires would ensure a much needed balance in the application of responsibility norms for private space activities.

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